

ABSTRACT

A process for producing a tape-like material uniformly containing highly pure single-walled or multi-walled carbon nanotubes and a tape-like material produced thereby with a high density highly pure single-walled or multi-walled carbon nanotubes; a high-performance field emission electrode including the tape-like material; and a process for producing the field emission electrode. The For synthesis of carbon nanotubes are synthesized by arc discharge, wherein an inert gas or inert gas-containing mixed gas is jetted onto a cathode (2) comprising having a carbon material from the inside (11a) of a hollow electrode (11) used as an anode, and simultaneously an arc is generated to form a path of arc discharge along the a stream of the gas. Consequently, the cathode spot is prevented from irregularly moving, and thus highly pure carbon nanotubes can be produced. At the same time, by relative movement of the relatively moving both electrodes, so as to move the cathode spot of the arc (3) is moved on the cathode, and the synthesized carbon nanotubes are formed into a tape.